DEPTH TRAINING IN SOIL MANAGEMENT

Thesis for the Degree of M. S.

MICHIGAN STATE UNIVERSITY

Abram J. Relyea

1962

ABSTRACT

DEPTH TRAINING IN SOIL MANAGEMENT

By Abram J. Relyea

The Cooperative Extension Service is constantly endeavoring to improve its educational methods. One extension education method which is rapidly growing in popularity in many states is the "depth training" method, which consists of a series of meetings which explore a subject in greater depth than has been possible through the more traditional "one shot" extension meetings.

The purposes of this study were: (1) to explore some of the factors which are thought to be associated with the opinions concerning the educational impact of depth training meetings in soil management on farm operators; and (2) to determine the opinions of departments in the extension agricultural program area of the depth training method.

The dependent variable in this study was the "educational impact" of these meetings, and a series of hypotheses were developed to explore the independent variables which were thought to offer possible explanations of high or low educational impact.

From a total of 165 Michigan farmers who completed a series of depth training meetings in soil management, ten were randomly selected for interviews in each of two counties. Also interviewed were the instructor and agents concerned. In addition, three of the day-long meetings were observed by the writer.

Fourteen project leaders in the extension agricultural program area were interviewed to determine departmental use of and opinions of the depth training method of teaching farmers.

Concerning the dependent variable, the findings indicate that the meetings did have a high educational impact and that farmers liked this method of studying soil management. The instructor liked this method of teaching and the agents felt that depth training provided an excellent educational approach. The observations of the writer and the follow up action of the farmers gave support to the conclusion that they had a high educational impact.

Twelve of the fourteen departments in the extension agricultural program area were involved in depth training and they felt that it was an excellent way to reach farmers. The two departments that were not involved in depth training were satisfied with their present educational methods.

Concerning the independent variables which are offered as possible explanations of why these meetings had a high educational impact, the following brief generalizations are made:

Hypothesis 1. Large amount of practical as contrasted to basic content ————> high educational impact. This hypothesis received some support. Although the instructor intended to offer 80% basic subject matter, the actual offering was judged to be between 50% - 70% practical.

Hypothesis 2. Reference group formation ————> high educational impact. This hypothesis received support. Although no attention was given to group formation by those responsible for planning and conducting this series of meetings, various indicators show that a social group was formed and that this group was considered as a reference group by participants.

Hypothesis 3. Effort of agents ————> high educational impact. This hypothesis received support.

Hypothesis 4. Practical soils problem ————> high educational impact. This hypothesis was not supported. If the hypothesis had said general soils problem instead of practical soils problem, it may have been supported.

Hypothesis 5. Opportunity for questions and discussion ————> high educational impact. This hypothesis

was supported. Although the instructor tired to limit questions and discussion to a bare minimum the farmers interviewed felt they had ample opportunity for questions.

Hypothesis 6. Use of visual aids ————> high educational impact. This hypothesis received support. There was considerable praise given the use of slides and the slide-tape combination by the instructor.

DEPTH TRAINING IN SOIL MANAGEMENT

By

Abram J. Relyea

A THESIS

Submitted to
Michigan State University
in partial fulfillment of the requirements
for the degree of

MASTER OF SCIENCE

Joint Program in Department of Soil Science and

Institute for Extension Personnel Development

1962

ACKNOWLEDGMENTS

The author wishes to express his appreciation to the members of his committee for their helpful guidance during the period of graduate study at Michigan State University, and for their wise counsel during the development of the research project and in the preparation of his thesis. Professors who served on the graduate committee were: Jack C. Ferver, chairman; Lynn S. Robertson; Wade W. McCall; Denio A. Caul; and Robert E. Lucas.

Special appreciation is extended to Jack C. Ferver for his extra help in this study and to Lynn S. Robertson for his guidance on course work in the department of Soil Science.

Sincere appreciation is extended to Lowell S. Watts Director of the Colorado State Extension Service who was instrumental in a study leave being granted from Colorado State University.

Appreciation is also extended to Robert Laser, County Extension Director in Monroe County, Michigan, and John Baker, Director in Gratiot County, Michigan, for their help in securing the data for this study.

Finally, special credit is sincerely given to the author's wife, Barbara, for her understanding and encouragement exhibited throughout the study.

AUTOBIOGRAPHICAL SKETCH OF AUTHOR

The author was born October 28, 1922, in Albany, New York. The first 18 years of his life were spent in rural New York.

He graduated from Draper High School, Rotterdam, New York in 1941. For three years he worked at various jobs before deciding to get a college degree in agriculture and to make agricultural work his career.

In November, 1944, he enrolled at Cornell University as a student in animal husbandry, receiving a B.S. degree in June, 1948.

Upon graduation he accepted a position as assistant 4-H club agent in Jefferson county, New York. He also worked in St. Lawrence county for two years in the same capacity.

In 1952 he moved to Colorado and accepted a job as an assistant county agricultural agent in Denver county and later in Morgan county. In 1955 he became county agricultural agent in Costilla county, Colorado, and has remained in that position until granted sabbatical leave for ten months of study at Michigan State University in September, 1961.

The author was married to Barbara J. Lilly in July of 1950. They are the parents of James Otis, 6; and Sandra Jeanne, 4.

TABLE OF CONTENTS

CHAPTER I

INTRODUCTION

Purpose

The purpose of this study is to explore some of the factors which are thought to be associated with the opinions concerning the impact of depth training meetings in soil management on farm operators who were enrolled in at least one series of meetings.

Three aspects of this study are:

1. A determination of the educational impact of depth training* in soil management on farm operators. Some attention is given to a comparison of depth training to the "one meeting" approach that has been traditional in most extension programs in the past.

2. A determination of the relationships which exist between the educational impact of the depth training meeting and:

   (a) the extent practical and basic subject matter is taught.

---

*Twenty hours of instruction. A more detailed definition can be found on page 24.

(b) the extent of the responsibility of the County Extension Agent in arranging for and carrying out the meeting.

(c) the extent to which the participants had a soil management problem.

(d) the use of certain teaching techniques, particularly visual aids and discussions.

(e) the extent to which the class forms a group and the participants give evidence that this group is a reference group.

3. A determination of the departments in the extension agriculture program area which are using depth training to teach farm operators, and why, if they are, or why not, if they are not.

Implications of Study

Michigan State University was one of the first land grant institutions established in the United States. Being a land grant institution, it is largely supported by taxes paid by the people of Michigan. The money to operate the university is appropriated by the state legislators, who are elected by the people. These legislators divide the money according to the wishes of the taxpayers. This, then,

makes it quite important that the people who pay these taxes have a high regard for the way in which Michigan State University is serving, not only the students on campus, but the people throughout the state.

Nearly all educational institutions in the country have been experimenting with different ways of teaching subject matter more effectively. The Cooperative Extension Service, which conducts a large number of informative meetings for both 4-H members and adults, is constantly trying to improve its methods of teaching. The task of educating adults, a task in which the Cooperative Extension Service has a measure of responsibility, is perhaps an even greater challenge than the challenge of educating the younger generation.

Michigan State Extension Service has been increasing its emphasis on training in depth during the past few years. This type of training is much the same as a short course without credit. There is usually no charge for the instruction to the recipient. There seems to be a growing feeling on the part of specialists and agents involved that this is an excellent way of educating the people out in the state.

As the programs in extension shift toward the depth training approach and away from the "single meeting" approach, there may have to be some thought devoted to the affect of

this shift on both extension personnel and the public.

These types of meetings may mean that the structure of future meetings will have to be rearranged. Meeting places will have to be secured that will provide the facilities that are necessary for this type of instruction.

Subject matter may have to be assembled to give more of the basic information and less of the practical aspects of the subjects discussed. There may have to be a re-allocation of educational resources. Specialists and extension agents might have to revise and add to their notes and reference material. Extension agents, as well as specialists, may need to give increased attention to, and preparation in, certain fields because they may need to carry a different kind of teaching load. There may not be enough specialists available to meet the demand if this type of training is as good as some people seem to think it is. There is an ever-increasing awareness on the part of some farmers that additional information is necessary if they are to remain in the business of farming.

If depth training meetings seem to attract opinion leaders in the community, depth training will give extension a greater opportunity to work with these people and to influence them to a greater extent than the single meeting

would. This could, in turn, further extend the influence of extension beyond the people who attend these meetings.

For many years the demonstration has been recognized as one of the most effective ways of changing the practices of farmers. Due to the technological advances made by science and the changing of agriculture from a way of life to a complex business, there are many things that cannot be demonstrated with the time and money available. Perhaps these depth training meetings could, to a large extent, replace the demonstration as an important method of affecting changes necessary in today's agriculture.

If in this exploratory study it can be shown that there is evidence to support the proposition that depth training is a highly effective method of teaching research findings, then a more thorough study should be made of this approach.

Problem Situation

With the ever-growing number of sources for practical information, and the numerous channels of communication, it is much easier today for the farmer to obtain information on many of his farm management problems, including those of soil management.

Private industry and research institutions are constantly sending out information through such channels as radio, television, newspapers, fieldmen, and publications. This enables farmers to be more aware of the latest developments in agricultural chemicals, new machinery, new crop varieties, and new methods that will overcome the management problems on the farms.

Farms throughout the country are becoming specialized because of the high cost of machinery and greater efficiency that can be attained by growing one or two crops or by raising one kind of livestock. There are other reasons for this trend, but these perhaps are the important ones.

The educational level of the farm operator is generally higher today and thus he is able to evaluate the information he receives through the different channels of communication and apply it to his situation. The extension service has played a big role in supplying the practical information the farmer has needed. With this information coming from other sources the farmer may be looking to extension to furnish another type of service.

As farms become more specialized and as the educational level of farmers rises, it becomes imperative for the farm operator to learn the basic facts concerning the production

of crops and livestock.

The use of depth training to teach these basic facts may be the most efficient use of the limited resources available to the Cooperative Extension Service.

CHAPTER II

REVIEW OF RELATED LITERATURE

The purpose of this chapter is to review the literature concerning the methods and techniques which are currently associated with certain concepts of program development in adult education. These concepts are:

1. Methods of teaching soils information
2. Use of visual aids in teaching
3. Social group process and its relationship to learning.

Adult Education

Extension education is one of the segments of the broader field of adult education, and it is to this broader field that the author has turned for the major portion of this literature review. After an extensive review of the research in adult education, Brunner makes the following statement.

> Liberal adult education itself is a huge field. It encompasses most of the area of knowledge. It is largely conducted on a voluntary basis with none of the compulsions of formalized education in school or college. It lacks the economic incentive of vocational education. Its participants have many motives but their consistent pursuit of learning, whatever avenues and agencies of adult education they

> have chosen, is largely determined by personal values and satisfactions. Adult educators therefore face problems in gaining and holding their constituents unlike those of other educational workers. From this has sprung a basic tenet in adult education philosophy: that the participant must be offered what he wants.
>
> From this situation also has come the need for research differing sharply in character from that which services the public school or other formalized educational enterprises. For nonvocational adult education, with few exceptions, has no entrance requirements save interest, no homogeneous groupings, no grades and grading, no graduation, no diplomas or degrees. It is available from no single recognized and accredited agency like the school but rather from hundreds of agencies and institutions which differ widely in character, support, and objectives.[1]

This study is concerned with meetings as a method of teaching soil management information and the use of visuals as a technique at these meetings.

Meeting Methods and Techniques in Adult Education

This study is concerned with a series of meetings, (group contacts) and their educational impact, as well as the opinions formed as to the value of these contacts as opposed to one meeting. Group contacts have been differentiated from other types of contacts for the purposes of this study along the following lines:

Individual contacts (counseling)

---

[1]Edmund Brunner and Associates, An Overview of Adult Education Research, (Adult Education Assoc.) pp. iv-v.

Group contacts (meetings)

Mass media (radio, newspapers, etc.)

Extension has used meetings for many years as an efficient means of teaching adults newer methods of farming and homemaking. Improved roads and faster means of transportation in recent years has made it an even more important method of teaching rural people. Rohrer has another reason for the importance of meetings:

> With the rising educational level of the rural population, meetings have become more important in achieving educational objectives and are preferred over other devices by the clientele.[2]

There are many techniques and methods of teaching information at meetings. The one most commonly used is lecture. If a person has the ability to make a lecture interesting he can usually do an effective job of teaching. If he does not have this ability it may be better for him to use some aids in the presentation of the information. Hearne says this about lectures:

> Lectures at such meetings are considerably more effective if used with film strips or charts and supplemented by a discussion period than when used without these aids.[3]

---

[2]W. C. Rohrer, The Extension Service in Cecil County, Maryland, College Park, University of Maryland, Agricultural Experiment Station, 1954.

[3]C. Hearne, Factors Which Affect the Influence of Meetings as a Means of Extension Teaching (unpublished M.A. thesis, Madison, University of Wisconsin, 1932).

The ever-present problem is to determine what methods or techniques are best for what kinds of people used by what sorts of teachers in what types of situations.

There are many other types of visuals in addition to film strips and charts. It is not necessary to use all of the kinds of visuals in a meeting or a series of meetings to teach the information effectively. It may be more efficient to use just one or two types of visuals to present the information than to use many types.

While one or two other types of visuals were used by the instructor to present the soil management information, in these depth training meetings 2 x 2 slides were used more than the others.

Because of the extensive use of synchronized slide-tape presentations by the instructor, and because of the pioneering work done by the instructor in using this automatic teaching device in the field of agricultural extension work, particular attention was paid in interviews conducted in this study to getting reactions to the use of this teaching aid. This portion of the review of literature, therefore, deals largely with projected image visuals.

During the review of the literature, one book was found to be a valuable source of information. There are

several authors contributing articles in the book. This book, Research, Principles, and Practices in Visual Communication is cited exclusively in this portion of the review.

Visuals are one means of communication, and communications are essential in the learning process. Learning is the modification of behavior as the result of some prior experience, and an appropriate use of visuals can reinforce the learning experience. Cook states that:

> Learning is not confined to the acquisition of facts. It also includes the formation of attitudes, beliefs and other implicit responses that mediate overt behavior. In some cases the communicator is interested in immediate action, and not in retention. In other cases, as when we are explaining how to use a particular piece of equipment, we may want the audience to retain detailed information. Retention is not a problem that can be readily separated from learning; in general those things that promote better learning also improve retention.[4]

The most frequently used channel of communication in our society is verbal, either spoken or written. Primitive societies used visuals instead of writing words, and a lot of our knowledge of their customs is based on those pictures. We, perhaps, have not given adequate attention to the various modes of visual communication. In an article prepared by

---

[4]John Ball and Francis C. Byrnes, Research, Principles, Practices in Visual Communication, National Project in Agricultural Communication, Wells Hall, Michigan State University, East Lansing, 1960, p. 91.

Robert C. Snider the following statement by Louis H. Sullivan was quoted:

> Real thinking is better done without words than with them, and creative thinking "must" be done without words. When the mind is actively and vitally at work, for its own creative uses, it has no time for word building; words are too clumsy; you have no time to select and group them. Hence you must think in terms of "images," of pictures, of states of feeling of rhythm.[5]

A big share of the pictures that are used as visuals in teaching are shown by the use of a projector. I. A. Taylor in his article "Selection and Use of Visual Media" has this to say:

> All of the visual materials that require a projector have some qualities in common that are inherent in the fact that they are projected. First of all, projected materials require a strong force of light in a relatively darkened room, and consequently they attract and hold attention. Psychologists tell us that it is an almost uncontrollable human characteristic to look at a spot of light in a darkened room. The projected image, therefore, temporarily unifies the attention of the audience and there is much evidence that the group will work together better following the projection due to the fact that they have been experiencing the same thing and have more or less similar perceptions of that experience.[6]

If the class members who experience the projected image in a darkened room do form a group, and there is much

---

[5] Ibid., p. 119.

[6] Ibid., pp. 124-25.

evidence to support this statement, then it would seem that if they met several times under these conditions, there would be even more of a tendency for the members to form a group. When these same members have an opportunity to get acquainted with one another, establish the same norms, and there is cohesion among the members, they tend to form a social group.

Social Group Process, Relationship to Learning and Adopting New Practices

Group structure and group process were reviewed in the literature because they may influence the educational impact of the meetings. Social groups are more apt to form in a series of meetings than they are in one meeting.

Small social groups occupy a strategic position as determiners of the behavior and attitudes of their members. Festinger points this out in stating:

> The type and degree of contact among the members, the functions of the groups, and the goals of the group will determine how and why its influences are exerted.[7]

Groups must be able to communicate to function properly. Further on in the book, Festinger makes the statement:

---

[7]Leon Festinger, Social Pressures in Formal Groups (New York: Harper, 1950), p. 3.

> Detailed knowledge concerning the process of communication among people, and the factors affecting various aspects of this communication is essential for a thorough consideration of group functioning and of the relations between individuals and social groups. Such communication, verbal or otherwise, is after all, the means by which groups function effectively together, and the means by which the general process of social existence is made possible.[8]

If the individual feels a strong attachment to a social group he may even use it as one of his reference groups. Depth training does bring people together a number of times. This should give the individual a strong feeling of attachment if his experiences and relationships are good. Sherif has this to say concerning the relationship of the individual and social groups in society:

> The individual relates himself, in any society to a group or groups; these are his reference groups. Usually, especially in undifferentiated societies and in rural areas, one's reference group is his actual group but diverse groupings in modern differentiated societies make necessary a delineation between reference group and membership group. An individual in a big city actually may belong to diverse groups - his various membership groups. Or circumstances may be such that he may live as a part of the actual group (membership group) but psychologically may relate himself to a different group and regulate his experiences and set of aspirations accordingly. In such cases, his reference group may be different from his membership group.[9]

---

[8] Ibid., p. 114.

[9] Muzafer Sherif, An Outline of Social Psychology (New York: Harper Brothers), p. 123.

A group that the individual uses as a reference group shapes his attitude which in turn determines his behavior. Merton's comments on this function of reference groups is as follows:

> Reference groups are, in principle almost innumerable: any of the groups of which one is a member, and these are comparatively few, as well as groups of which one is not a member, and these are, of course, legion, can become points of reference for shaping one's attitudes, evaluations and behavior.[10]

Sherif's contribution to the literature on the subject of reference groups is also of interest:

> Reference groups are those groups to which the individual relates himself as a part or to which he aspires to relate himself psychologically.[11]

The following is another comment by Sherif:

> A reference group of an individual is the group that provides his specific anchorings in attitude formation and attitude change.[12]

Attitude change has to take place before a farmer will adopt a new practice. In a study of extension teaching methods, and other factors that influence adoption of agricultural practices Wilson found that:

---

[10] Robert K. Merton, Social Theory and Social Structure, (Glencoe, Illinois: The Free Press, 1957), p. 304.

[11] Sherif, op. cit., p. 628.

[12] Ibid., p. 628.

> Of the 81 practices in 100 adopted as a result of various teaching methods, 33 were credited to group contacts.[13]

One of the basic philosophies of the Cooperative Extension Service has been that the programs should be initiated at the grass roots. Extension was created to help the people solve their own problems, and not to solve the problems for them.

Participation in Program Development

Participation in program development was reviewed in the literature because most extension people feel that it is important for the success of any program to have the participants help plan that program. Matthews has this to say about program development.

> People know best their own needs and interests, and are competent to make decisions affecting their own welfare. This means that the people's ideas are an essential part of desirable programs, and that programs developed with the people are the most basic ones.[14]

---

[13] M. C. Wilson and G. Gallup, "Extension Teaching Methods and Other Factors That Influence Adoption of Agricultural and Home Economics Practices," Review of Extension Research, U. S. Federal Extension Service, 1955, p. 29.

[14] J. L. Matthews, How to Develop a Program, Division of Field Studies and Training, Extension Service, United States Department of Agriculture.

In the field of adult education, "program" is commonly used to describe the type of activities developed by a voluntary association, agency or non-educational institution for its public. This is what Knowles has to say about programs:

> The adult education programs which are not under such pressures to conform to traditional curricula are more helpful in discovering the rationale behind uniquely adult education program development. In this regard, there appears to be remarkable consensus among adult educators as to the formal steps in successful program development - whether for a single meeting or a year's program.
>
> These can be simply stated:
>
> 1) Determine the needs of the constituents
> 2) Enlist their participation in planning
> 3) Formulate clear objectives
> 4) Design a program plan
> 5) Plan and carry out a system of evaluation.[15]

Since the ultimate end of any adult education program is to change the behavior of adults, the function of specific objectives is to indicate what changes are to be expected as a result of contact with a program. Program development is concerned with the subject matter taught, not necessarily with methods of teaching.

As was pointed out previously in this study, extension education is one segment of adult education. This study is

---

[15]Malcolm S. Knowles, Handbook of Adult Education in the United States, Adult Education Association of the United States, p. 66.

concerned with a method of extension education in the field of soil management.

Extension Education

Few people would question that the Cooperative Extension Service has played an important role in helping the American farmer to become the most efficient producer of food and fiber in the world today.

Extension was created to interpret the findings of the agricultural experiment stations and to teach this information to the people.

Knowles says:

> The Cooperative Extension Service pioneered with materials and methods adapted to the teaching of adults. Visual materials always have been a feature of its teaching activities. It has also made a substantial contribution to new knowledge and methods through educational research and evaluation. The total volume over the years has been larger than that of any adult education organization.[16]

Extension Methods of Teaching Soils Information

A review of the literature failed to discover any appreciable amount of research related to extension teaching methods in the field of soils.

---

[16] Ibid., p. 229.

Up until recent years, soils information has been taught by the methods and techniques of demonstrations, farm visits, talks before farm organizations and commodity groups, technical bulletins, and the use of mass media.

In recent years, Dr. Lynn S. Robertson, Extension Specialist in Soil Science at Michigan State University, has been widely recognized for use of the depth training method to teach farm operators the importance of sound soil management for efficient crop production.

When one is teaching farm operators it may be a help to see if it can be determined how much they already know on the subject. Terminology used by extension specialists may not be understood by farmers. Terms used in the soil management field are changing and if they are not understood by the farmers, they will not receive much help in solving their soil management problems.

In a recent study in Wisconsin, Douglas Sorenson pointed out that the most useful factor in determining how much soils knowledge a farmer has is the amount of formal education he has completed.

> Even with age and experience held constant, farmers with higher education had a better knowledge of soil concepts. The high school diploma, farm short courses, or night school -- even if the farmers

> got it thirty years ago -- seems to have impetus to further learning all through life.[17]

Sorenson goes on to point out that certain factors were less important:

> The type of farming practiced made no difference in soils knowledge. Hog-beef, crop, and dairy were the dominant types of farming in the areas surveyed. Geographical location in the state had no measurable relationship to soil score. The farms in this survey were all on good soil and had other similar characteristics. Their geographical locations were the main differences.[18]

---

[17] Douglas Sorenson, Factors Influencing Knowledge of Technical Soils Concepts by Wisconsin Farmers, Department of Agricultural Journalism, College of Agriculture, University of Wisconsin, Bulletin 27, March 1957, p. 23.

[18] Ibid., p. 28.

CHAPTER III

METHODS AND PROCEDURES

The purpose of this chapter is to provide a background on the methods and procedures employed in obtaining the data.

Hypotheses

With the purpose of this study to explore some of the factors which are thought to be associated with the opinions concerning the impact of depth training meetings in soil management on farm operators, the following hypotheses were developed to give direction to the study.

1. The more the members thought practical soil management information was contrasted to basic soil management information was presented at these depth training meetings, the higher the opinion farmers will have of these depth training meetings. (Interview questions 1 and 2)

2. The greater the extent of the members' perception of their soils problems, the higher will be their opinion of these depth training meetings. (Questions 3, 4, 5, 6, and 7)

3. The more effort by the agents, in the opinion of the members, to promote these meetings, the higher the members' opinions of these depth training meetings. (Questions 8, 9, and 10)

4. The higher the members' opinions of the use of visual aids, the higher their opinions will be of these depth training meetings. (Questions 11 and 12)

5. The more the participants thought there was an opportunity for discussion and questions by the group, the higher their opinion will be of these depth training meetings. (Questions 13 and 14)

6. The more the members felt the class was a group, the higher their opinion of these depth training meetings. (Questions 15 and 16)

Operational Definitions

Practical Soil Management Information

For the purpose of this study, practical soil management information is information that can be applied, with little or no alterations, to solve a particular soil management problem. Example - Depth that tile should be laid.

Basic Soil Management Information

For the purpose of this study, basic soil management information is information that can be used as a reference or basis to derive sound soil management practices on any type of farm. Example - Soil profile characteristics in relation to soil drainage.

Depth Training

For the purpose of this study, depth training is instruction of at least 20 hours in a specific field of agriculture. Example - Soil Management.

Group

For the purpose of this study, a group is defined as a number of persons who have the same norms, where there is cohesion and maintenance, and where some sort of leadership hierarchy is shown.

Reference Group

For the purpose of this study, a reference group is defined as a group of individuals who influence a person's attitudes and with whom he assumes he shares a set of norms.

Educational Impact

For the purpose of this study, educational impact is defined as the general opinions of the participants concerning the depth training meetings, including the opinions concerning their gain in knowledge.

Methodology

Organization of Meetings

This study is based on two series of depth training meetings in Gratiot and Monroe Counties in Michigan. There were 65 enrolled in the course in Monroe County and about 100 in Gratiot County. The attendance in Gratiot County started at 80 and the attendance increased to over 100 by the third meeting. The attendance in Monroe was limited to 65 by the size of the room available. There were six meetings in the series of soil management instruction. The meetings started at 10:00 a.m. in each case and ended at 3:00 p.m. Each group ate lunch together and there was a coffee break in the middle of the morning session in Gratiot County. There were breaks in the sessions in Monroe County also, but no coffee or doughnuts were served.

Dr. Lynn S. Robertson, Extension Soil Specialist from Michigan State University, was the instructor at each meeting except one in Monroe County. The extension agents helped with the instruction to a limited degree. This help was confined to the questions and discussion.

The farmers who attended the meetings, for the most part, had received a letter explaining the course and what would be covered. Each farmer who attended was asked to

return a card to enroll in the course. The agents tried to limit the number attending in each county for three reasons: (1) to select farmers who were at about the same level as far as knowledge was concerned; (2) the size of the meeting room available; and (3) it becomes difficult to teach effectively if the size of the group is too large.

In each county, however, there was an article in the newspapers, and in Gratiot County an announcement was made on the agent's radio program telling about the meeting. So, while not all farmers on the county agent's mailing list received a letter (letters were sent to the farmers whom the agent thought would be interested and who had attended a prior series on soil management a few years previous), there was an opportunity for most farmers to enroll in the course.

Study Methods

After the series of meetings were completed the author obtained the names of the participants from the county director in each county. Fifteen farmers were selected at random in each county. These farmers were sent a letter requesting an interview at their convenience. Ten of the fifteen replied from each county by means of a

self-addressed envelope, which was sent with the letter requesting an interview (Appendix E).

Ten farmers in each county were interviewed and asked 20 questions. These questions were designed to see what their opinions were of these depth training meetings in soil management, the amount of educational impact they had, and why they thought this way. The locations of the farms were well-distributed over each county. A copy of the interview schedule may be found in Appendix D.

The author attended two meetings in Monroe County and one in Gratiot County to become acquainted with the members of the class, so that it would be easier to talk to some of them later, to observe how the information was tuaght, and to try to determine if the members formed a group as defined in this paper. An attempt was also made to determine what percent of the information taught was practical and what percent was basic as defined in this paper. A copy of the subject matter outline is found in Appendix C.

The project leader of each of the 14 departments in the Extension Agricultural Program area was interviewed to find out if their department was active in depth training of farmers and, if so, why, and if they were not, why. The replies were summarized and an attempt was made to relate their opinions to the opinions of the farmers.

Limitations of the Study

The meetings were too well received by the farmers to get an accurate test of the hypotheses. Seventeen of the twenty farmers ranked the meetings in the high range of opinion towards the educational impact and three ranked them in the medium range. Not one farmer interviewed had a low opinion of the meetings.

There was not enough range of opinions concerning the educational impact of the meetings to get any reasons why the meetings were rated low.

It did not seem to matter what the farmers thought of the actions of the instructor or the methods and technqieus used, they still had a high opinion of the depth training meetings.

The study was conducted on a depth training series that was taught by a man who is recognized as a leader in the field of depth training organization and techniques, not only by the farmers whom he taught and the agents who have worked with him, but also by nearly all of the project leaders in the Extension Agricultural Program area.

Because of this and because this study was concerned with only one type of subject matter, care should be taken in making generalizations to other depth training courses.

There was no pre-test given to the class members before the series of meetings began, and therefore we only have evidence after the fact to test the value of the meetings.

Since there was no pre-test given, there was therefore no way in which to measure the change in knowledge and attitudes of the participants.

CHAPTER IV

PRESENTATION AND ANALYSIS OF DATA

Introduction

This chapter is concerned with: (1) the educational impact of these depth training meetings on the participants (dependent variable); (2) the independent variables which attempt to explain why the depth training meetings were so well received by the members who were enrolled; (3) comparisons of farmers' opinions to the opinions of the county directors, the instructor and the author; and (4) the views concerning depth training of the project leaders in the Extension Agricultural Program area.

Data Concerning Dependent Variable

The dependent variable in this study is the opinions concerning the educational impact of the depth training meetings in soils. This is explored in terms of the general reaction of participants to the meetings and their opinions concerning their gain in knowledge.

In this evaluation study this is the necessary first step to explain why these meetings were or were not well

received. All evidence points to the fact that, in the opinion of the respondents and the author, these meetings did have a high educational impact.

Table 1. Educational impact of depth training meetings.

	Farmer Ratings	Follow-up action by farmers	Agents	Instructor	Observations of author
High	17	X	3	X	X
Medium	3				
Low					

That these meetings were well received by the farmers who were enrolled is evidenced by the fact that the attendance increased or remained the same at each successive meeting. In Monroe County, where the size of the room limited the increase in attendance, the members took up a collection and presented the county director and the instructor with an award for the extra effort they put into the meetings.

The educational impact upon the members seemed evident by the fact that after the series of meetings were concluded, both groups requested that another meeting be held. The group in Monroe County held another meeting one evening in the county, and the group in Gratiot County made

a trip to Michigan State University, to tour the greenhouses where the Soil Science Department has some of its research work.

The replies of the farmers to questions 1, 3 and 4 give evidence that there was a gain in knowledge as a result of attending these depth training meetings.

Additional evidence that these meetings were well received was indicated by some of the remarks made by farmers during the interviews with them. When asked if Michigan State University and extension were doing the right thing in offering these courses around the state, one farmer replied, "Yes, I don't know why they haven't had more of them."

Another farmer, when asked if he would be willing to pay for this type of instruction, or should the cost of the meetings come from taxes, said, "I am glad you asked that question. My taxes are high enough; I would be glad to pay for them because I think that the people that benefit most should pay for the cost of the meetings."

A fertilizer representative who attended the meetings in Monroe County was so well pleased that his company paid for everyone's lunch at the last meeting of the series.

Data Concerning Independent Variables

The independent variables considered in the hypotheses are discussed one at a time and the opinions of all the people concerned in the study are expressed. In the original formulation of the hypotheses of this study the independent variables were drafted in an attempt to explain why the depth training meetings were or were not well received. It has been established in the previous discussion of the dependent variable that they were, in fact, well received, and thus the treatment of the independent variables in this section becomes an attempt to explain why they were well received.

Practical - Basic Subject Matter

The predicted relationship between the dependent variable of educational impact and the extent the basic-practical subject matter content, taught in these depth training meetings, was in the direction of high practical content - high impact. This predicted relationship and the actual findings are shown in Table 2.

Table 2. Relationship of educational impact to practical basic subject matter.

Independent Variable	Dependent Variable		
Practical - Basic	Opinion Concerning Educational Impact		
	High	Medium	Low
High Practical - Low Basic	Predicted Actual Majority		
Medium Practical Medium Basic		Actual Minority	
Low Practical - High Basic			

Soils Meetings

Ten members said that the amount of practical information was above 60%, while ten said that it was at least 50%. Two of the three who rated the course in the medium range also said that the amount of practical information was at least 50%.

The county directors, instructors, and the author all thought that the amount of practical information in contrast to basic was between 60% and 70%. The instructor tried to make the information 80% to 90% basic.

Agricultural Project Leaders

When asked what proportion of the information taught should be basic as compared to practical, the project leaders were about equally divided. The departments such as Dairy and Poultry were teaching a high proportion of basic information, while the Entomology and Plant Pathology departments were staying with the practical. Some of the project leaders indicated that they tried to hold to the basic principles but the questions asked by members of the group tended to lead towards the practical.

Perception of Soils Problem

The predicted relationship between the dependent variable of educational impact and the extent the members perceived they had a soils problem was in the direction of high perception of soils problems - high impact. This predicted relationship and the actual findings are shown in Table 3.

Soils Meetings

This hypothesis was proven false when fifteen of the twenty farmers said that they did not have a soil problem on their farm and five said that their soil problem was not serious.

Table 3. Relationship of educational impact to members' perception of soil problems.

Independent Variables	Dependent Variables		
Members' perception of their soils problem	Opinions concerning educational impact		
	High	Medium	Low
High	Predicted		
Medium	Majority		
Low		Minority	

It must be realized that these farmers could have had a soil problem on their farm that they were not aware of, which a few of them said the course had pointed out. Then, too, they may realize that their soil problem is of a general nature and that they should learn some basic concepts to deal with it.

Effort by Agents

The predicted relationship between the dependent variable of educational impact and the extent the farmers thought the agents put a lot of effort in planning and arranging for these meetings was in the direction of high effort - high impact. This predicted relationship and the actual findings are shown in Table 4.

Table 4. Relationship of educational impact to effort by agents.

Independent Variables	Dependent Variable		
Effort by the Agents	Opinions Concerning Educational Impact		
	High	Medium	Low
High	Predicted		
	Actual Majority		
Medium		Minority	
Low			

Soils Meetings

This hypothesis is supported by the fact that all but one of the farmers interviewed said they thought that the agents had put a lot of effort into the work of planning and arranging for these meetings. All of the class members said that they had plenty of information concerning the meetings to decide if they would be worth attending. The instructor and the author also thought that the agents had performed their tasks well.

Agricultural Project Leaders

The project leaders, whose departments were active in the depth training of farmers, were equally divided on

the question of the agent doing some of the teaching. They all thought that the agent should make the arrangements for the meetings and that it was important that the meeting place be suitable for the number attending and the teaching methods used. Departments such as Veterinary Medicine felt that the subject matter was too technical for agents to teach. Some project leaders felt that it was impossible for the agents to keep up to date on every subject in agriculture.

Use of Visual Aids

The predicted relationship between the dependent variable of educational impact and the extent that visual aids were used in these depth training meetings, was in the direction of high visual aids use - high impact. This predicted relationship and the actual findings are shown in Table 5.

Table 5. Relationship of educational impact to visual aids.

Independent Variable	Dependent Variable		
Opinions Concerning Use of Visual Aids	Opinions Concerning Educational Impact		
	High	Medium	Low
High	Predicted Actual Majority		
Medium		Minority	
Low			

Soils Meetings

From the answers to questions 11 and 12 it would seem that this hypothesis is supported. Participants not only liked the use of the visuals, but when questioned further they indicated they liked the variety in the teaching methods used in the meetings. A few questioned the use of slides that were out of date, and a few farmers felt that the instructor obstructed their view when he was running the projector by hand, but were only mildly critical.

Agricultural Project Leaders

All of the departments use a variety of teaching methods. Nearly all use slides. Some of the departments do not use slides at all because they find that some rooms cannot be darkened enough to make the use of slides effective. These teachers use charts and tables as well as the chalk board to vary their teaching methods.

Questions and Discussion

The predicted relationship between the dependent variable of educational impact and the opportunity for questions and discussions, at these depth training meetings, was in the direction of high opportunity - high impact.

This predicted relationship and the actual findings are shown in Table 6.

Table 6. Relationship of educational impact to questions and discussions.

Independent Variable	Dependent Variable		
Opportunity for Questions and Discussion	Opinions Concerning Educational Impact		
	High	Medium	Low
High	Predicted Actual Majority		
Medium		Minority	
Low			

Soils Meetings

This hypothesis seems to be supported as 16 of the farmers said that they had plenty of opportunity to ask all of the questions they wanted to, and that they liked the discussion that accompanied the questions. Four said that they felt a little restricted in the amount of time available for questions. The instructor usually tried to ignore questions asked by the group and to limit discussions as much as he could. It seems to be that the more the group has an opportunity to ask questions, the higher the percentage of practical information presented in contrast to basic.

Agricultural Project Leaders

Informal meetings were thought to be essential for the farm operators to learn the most from these depth training meetings, but some of the project leaders tried to hold the questions and discussion to a minimum so that they could stay away from the problem solving approach, and not let the trend of thought drift away from the subject. Most of the project leaders felt that the questions brought out some good points that they had not thought of when they prepared the lesson plans.

Group Formation

The predicted relationship between the dependent variable of educational impact and the extent that the members formed a group, at these depth training meetings, was in the direction of high group formation - high impact. This is shown in three steps in Tables 7 - 9.

1. Was a group formed?
2. Was the group a reference group?
3. Was the educational impact high because a reference group was formed?

Table 7. Relationship of extent class was a social group to the independent variables of group cohesion, maintenance, norms and leadership hierarchy.

Independent Variables		Dependent Variables: Extent to which the Class Is a Social Group		
		High	Medium	Low
Cohesion	High	Predicted / Actual Majority		
	Medium		Minority	
	Low			
Maintenance	High	Predicted		
	Medium	Actual Majority		
	Low		Minority	
Norms	High	Predicted		
	Medium	Actual Majority		
	Low		Minority	
Leadership Hierarchy	High	Predicted		
	Medium	Actual		
	Low		Minority	

Reference Group Theory

If the members, who attended these depth training meetings, did form a group, and all the evidence presented in this study seems to support this then it would seem that this group was also a reference group. The reference group becomes the dependent variable in this instance. This relationship between group and reference group is shown in Table 8.

Table 8. Relationship between reference group and group.

Independent Variable Group	Dependent Variable Reference Group		
	High	Medium	Low
	Predicted		
High	Actual Majority		
Medium		Minority	
Low			

Educational Impact on Opinion Change

It was shown in Chapter II, Review of Literature, that when an individual thinks of a group as his reference group, that group can affect a change in his attitude. Evidence that supports the author's opinion that this group was used by the members as their reference group, is

found in the remark made by eight of the ten farmers interviewed in Monroe County. "That plow-plant idea that Robertson was talking about is fine, but it won't work on my farm." This seemed to be the only information presented at these depth training meetings that was not fully accepted by the members. This relationship is shown in Table 9.

Table 9. Relationship of educational impact and opinion change to reference group.

Independent Variable	Dependent Variable		
Reference Group	Educational Impact Opinion Change		
	High	Medium	Low
High	Predicted Actual Majority		
Medium		Minority	
Low			

Soils Meetings

This hypothesis was given considerable support by the fact that nearly every farmer said he would like to get together with this same group again. When one farmer was

asked if he would like to get together with this same group again, he replied, "I wouldn't miss it for the world." When asked if they got acquainted with the rest of the group, most of them said that they did not have much chance to meet participants they did not already know. A few of the farmers said that they knew all of the members in the class before they enrolled in the course. The county directors, the instructor and the author felt that participants did tend to form a group. More perhaps in Monroe County than in Gratiot County because of the size of the class and because they met in the same room each time. Evidence that the Monroe County class members formed a group is found in the fact that they appointed a spokesman for the group.

Agricultural Project Leaders

The fact that a series of meetings such as used in depth training tends to form the members into a social group was taken into account by only two departments when they decided to use depth training to teach farm operators. All but three project leaders thought that it would be desirable to have the members form a group when the possible aid to learning aspect of group formation in depth training was brought to their attention.

Supplementary Data

Soils Meetings

The farmers who attended these meetings said that the time the meetings were held, both time of year and time of day, was ideal for them. Of the farmers interviewed, those in Gratiot County seemed to be five or more years ahead in Soil Management of the ones in Monroe County. For instance, they said that they have been using the plow-plant method for five years. The farmers in Monroe County questioned the method.

Agricultural Project Leaders

Ten of the twelve project leaders who were participating in the depth training method felt that the farmers should outline the areas that they wanted covered in the meetings, and then the specialists could include the specific topics in these areas that would be of the most help to the farm operators. Two of the leaders felt that they were more qualified to determine what the farm operators should be taught, than the farm operators were, themselves.

Summary of Data

In trying to summarize the opinions of the farmers who completed the depth training meetings in soil management

with the opinions of the project leaders who are engaged in depth training, it may be possible to see some areas of agreement.

The farmers felt that the agents had put a lot of time and effort in arranging for these meetings and were well pleased with the arrangements. The project leaders felt that the agents should make all of the arrangements and at least half the project leaders felt that the agents should teach part of the subject matter.

The farmers indicated that they preferred to have the instructor go deeply into basic phases of soil management, but seemed satisfied with the 60 to 70 percent practical information. Here again the project leaders were about equally divided as to whether more practical information in contrast to basic information should be taught.

Both the farmers and the project leaders thought that a variety of teaching methods should be used as long as they were used to advantage.

The class members who were interviewed seemed to think that they formed a group and the majority of the project leaders felt that the social group aspect might have an advantage in learning contrasted to a situation in which a class consisted of a collection of individuals.

The farmers interviewed liked to have an opportunity to ask all of the questions they wanted to, and the project leaders were unanimous in their opinions that informal meetings with questions were highly desirable as long as the questions were directly connected to the subject.

The county directors and the author felt that the soil management meetings were well presented and of great value to the farm operators who attended. All concerned felt that these depth training series do a much more thorough job of teaching the farm operators than the traditional one night meeting that extension has usually held in the past. It was also felt that depth training meetings can be used for most topics that are important to farm people.

Tabulation of Project Leaders Questions

A discussion of the replies from the project leaders has been completed earlier in this chapter. The following table shows the distribution of the replies to the questions.

Table 10. Opinion of department project leaders.

	High	Medium	Low
Departments Conducting or taking part in depth training.			
1) Should the agents take an active part in teaching as well as making all the arrangements for the meetings?	6		6

Table 10. Continued.

	High	Medium	Low
2) What proportion of the subject matter taught should be basic information?	5	1	6
3) Should a variety of teaching methods be used in this training?	12		
4) Does the fact that the members of a class tend to form a social group in a series of meetings help them learn more about the subject than they would in a single meeting?	8	1	3
5) Do you encourage discussion and questions by the class members?	12		
6) Do the farmers select the topics to be presented in these meetings?	10		2
Departments who are not conducting or taking part in depth training.			
1) Is it because there is too much time and money needed for this type of training?	1		1
2) Is it because the efficiency is low when you compare time and effort to the number of people reached through depth training?	1		1
3) Is it because you feel that it will not appeal to farmers?			2
4) Is it because there has been no grass roots demands for this type of training?	1		1
5) Is it because it does not fit your department's subject matter?	2		

CHAPTER V

SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

Summary

This study was designed to explore some of the factors which were thought to be associated with opinions concerning the impact of depth training meetings in soil management on farm operators and why these operators did, or did not, favor this type of training in contrast to the "one meeting" approach which has been generally used by extension in the past. More specifically, the purposes of this study were:

1. To determine the opinions held by farmers of a series of depth training meetings which they had completed in soil management, and to attempt to explain why these opinions were held.

2. To discover the advantages and disadvantages of this type of training for farm operators.

3. To explore the areas in which research might fruitfully be conducted to determine the value of the depth training approach to extension education.

Sources of Data

Farmers

Ten farmers who had completed a series of depth training meetings in soil management, in each of two counties in Michigan, were interviewed from a total of 165 farmers, who had completed the series. These twenty farmers expressed their opinions of the depth training method of teaching soil management information in their replies to twenty questions asked them in the interviews.

Instructor and Agents

The instructor and agents concerned were interviewed and asked the following questions:

1. What percent basic, in contrast to practical, soil information was presented at these meetings?
2. Did the class form a social group?
3. Should the agents take an active part in these meetings?
4. Were the meetings well received by the farmers?

The agents were asked to estimate the educational level of the members from his county and the size of their farm operation.

Project Leaders in the Agricultural Program Area

Fourteen project leaders were interviewed to see if they or members of their department were using depth training as a teaching method, and why, if they were, or why not, if they were not.

In the discussion with one project leader, he said that depth training was a "gimmick" used by extension to bring the farmers out to meetings. He predicted that in five or ten years it would run its course and some other approach would be used to attract farmers to educational meetings.

Observations

The author attended three meetings during the time the instruction was being presented at these depth training meetings. Observations at these meetings and the interviews conducted with all of the people mentioned in the study were the basis for his opinions expressed in this study.

Conclusions

After a careful study and analysis of the data obtained during the course of this study it would seem appropriate to draw some conclusions. The following conclusions are based upon the analysis of the opinions of the people interviewed, and the observations of the author during the process of conducting the study.

1. The farmers who attended these meetings indicated that they preferred depth training meetings in soil management to the traditional "one meeting" method usually used by extension in the past.

2. The farmers who attended these meetings indicated that they are becoming more and more aware that farming is a science and they were more concerned with learning the basic subject matter necessary for scientific farming. For this reason it is probable that they will attend future extension meetings which give them an exploration in depth into basic subject matter.

3. The farmers interviewed attended meetings because they wanted to hear about the latest advances in agricultural research and not necessarily because they

had specific problems. They seemed to recognize that they had general soils problems for which solutions might be more appropriately sought in basic subject matter meetings than in practical subject matter meetings.

4. The farmers who attended these meetings were aware of and appreciative of the efforts of the extension agents and the soils specialists in conducting this series of meetings. It is probable that the success of these meetings was related to the efforts of the extension staff members and extension soils specialists.

5. The farmers interviewed indicated that a variety of teaching methods in depth training was more important than the type used, and that the time of day and time of year these meetings were held was appropriate.

6. Farmers interviewed would be willing to pay the cost of depth training lessons ($15 - $25 in this case) if they were as well taught as the series on soil management.

Recommendations on Meeting Techniques

Based upon the observations and interviews conducted during the course of the study, it would seem appropriate to make the following recommendations on meeting techniques.

1. That a survey be conducted to see where the farmers are in relation to the subject matter being taught, before the training begins.

2. That slides or charts or other materials that are out of date not be used.

3. That visuals which do not aid the presentation not be used.

4. That all farmers have an equal opportunity to attend these meetings. If the number has to be limited, then let it be on a first come basis.

5. The agents should play an active role in depth training meetings if they are present at the meeting.

6. That the winter months seem to be the most appropriate time to hold depth training meetings.

Recommendations For Additional Research

This study was designed to explore the reasons why depth training is becoming an increasingly important

extension approach and to explore the reasons associated with the educational impact of this approach. There is still more research needed to be done before it can be said that extension should devote a large portion of their resources to the depth training method of teaching farm operators.

The author has listed a few of the possible avenues along which future researchers may like to journey in search of additional information in the area of depth training. These are:

1. A study should be made to ascertain if there is a measurable change in knowledge due to completing a depth training course. This study was based on the opinions of the farmers after they had completed the series of meetings, and therefore there was no measure of change of knowledge or opinion. The change in knowledge resulting from the depth training meetings might be compared to the change in knowledge resulting from a field day or just one meeting.

2. Since it seemed to the author that the farmers interviewed in Gratiot County were more advanced than the farmers interviewed in Monroe County (in the field of soil management), a study should be conducted to determine if the farmers in one section of the state are more advanced than those in other sections, and, if so, why.

3. A study might be made of the group aspect of these depth training meetings to determine if the group formed is used as a frame of reference by the members completing the series in the adoption of farm practices.

4. Data obtained in this study seems to indicate that farmers attend meetings to obtain basic information when their problems are of a general nature. If this is the case, then perhaps all extension meetings should be dealing with basic information unless the farmers have a practical problem (example: insect invasion) in which case the farmers would want the practical information (example: how to kill the insects).

As a result of this data it would seem logical to recommend that a study be made to determine if farmers want basic information when their problems are general, and practical information when they have practical problems.

BIBLIOGRAPHY

BIBLIOGRAPHY

Books

Brunner, Edmund and Associates. An Overview of Adult Education Research. Adult Education Association.

Festinger, Leon. Social Pressures in Informal Groups. New York: Harper, 1950.

Knowles, Malcolm S. Handbook of Adult Education in the United States. Adult Education Association of the U.S.

Merton, Robert K. Social Theory and Social Structure. Glencoe, Illinois: The Free Press, 1957.

Sherif, Muzafer. An Outline of Social Psychology. New York: Harper Brothers.

Public Documents

United States Farm Census 1960.

United States Population Census 1960.

Articles and Periodicals

Ball, John and Byrnes, Francis C. Research, Principles, Practices in Visual Communication. National Project in Agricultural Communications, Wells Hall, Michigan State University, East Lansing, 1960.

Matthews, J. L. How to Develop a Program. Division of Field Studies and Training, Extension Service, USDA.

Rohrer, W. C. The Extension Service in Cecil County, Maryland. College Park, University of Maryland, Agricultural Experiment Station, 1954.

Sorenson, Douglas. Factors Influencing Knowledge of Technical Soils Concepts by Wisconsin Farmers. Department of Agricultural Journalism, College of Agriculture, University of Wisconsin, Bulletin 27, March, 1957.

Wilson, M. C. and Gallup, G. "Extension Teaching Methods, and Other Factors that Influence Adoption of Agricultural and Home Economics Practices," Review of Extension Research, U. S. Federal Extension Research, 1955.

Unpublished Material

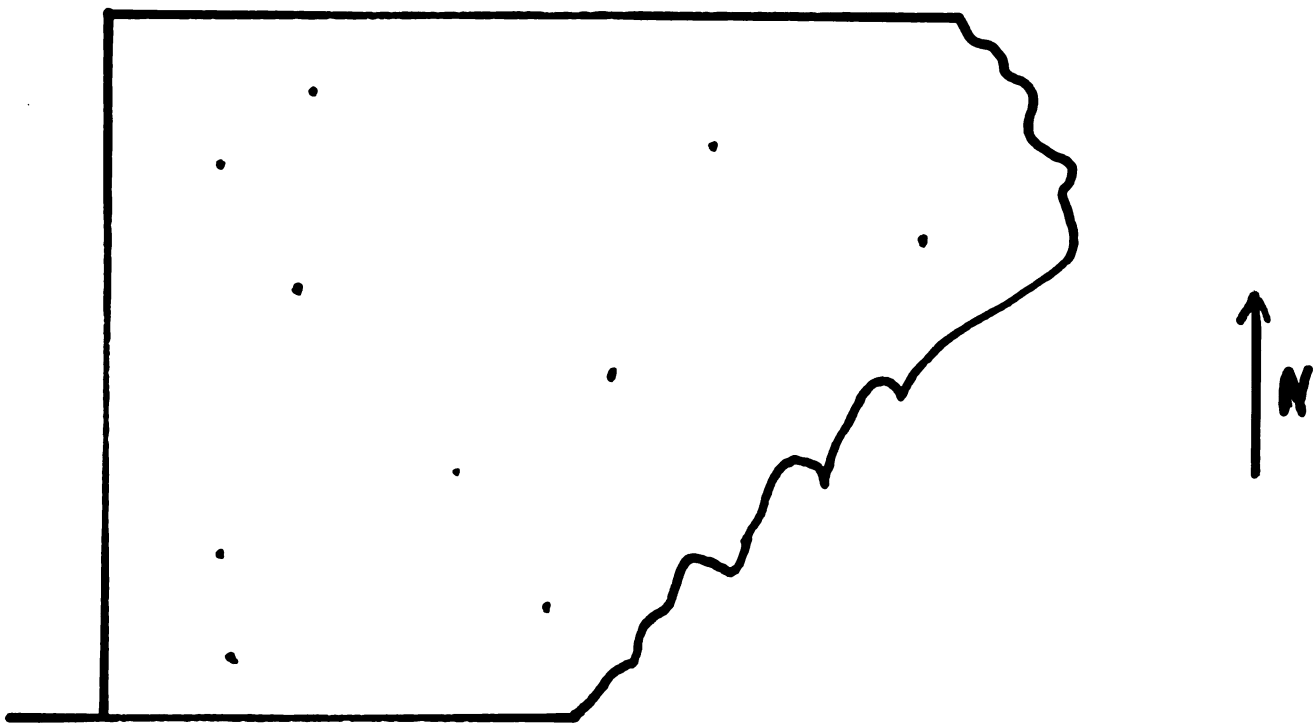
Hearne, C. Factors Which Affect the Influence of Meetings as a Means of Extension Teaching. Unpublished M.A. thesis, University of Wisconsin, Madison, 1932.

APPENDIX

APPENDIX B

DISTRIBUTION OF FARMERS INTERVIEWED IN GRATIOT COUNTY

Monroe County



Location of farms where interviews were held

226 acres was average size of farm of class members
99 " " " " " " in the county.[1]

Approximate ave.

12.5 number of years of schooling of class members.
8.8 Average years of schooling of farmers in county.[2]

---

[1]1960 U.S. Farm Census.

[2]1960 U.S. Population Census.

APPENDIX C

Outline of Soil Management Depth Training

by

Dr. Lynn S. Robertson

I. Introduction

1. What is soil management?
2. Soil-plant relationship.
3. Composition and nature of soil.
4. Soils of Michigan and _____ County.
   A. Use of soil survey reports.
   B. Soil management group.

II. The Control of Soil Water

1. Kinds of water.
2. Soil moisture constants.
3. Water requirements.
4. Water supply.
5. Soil water losses.
6. Irrigation.
7. Drainage.
8. Erosion (including wind).

III. Control of Soil Reaction

1. pH.
2. Nutrient availability.
3. Correcting soil acidity.
4. Correcting soil alkalinity.

IV. The Control of Soil Tilth

1. Sequence of crop.
2. Drainage.
3. Organic matter.
4. Tillage tools (depth).
5. Minimum tillage.

V. The Control of Plant Nutrients

1. Michigan Fertilizer Law.
2. Native nutrients N.P.K.
3. Ratio.
4. Grade.
5. Carriers.
6. Solubility.
7. Nitrogen.
8. Phosphoric acid.
9. Potash.
10. Secondary elements.
11. Minor (Micro) elements.
12. Fertilizer handling methods.

VI. Control of Organic Matter

1. Crop residues.
2. Green manure crops.
3. Cover crops.
4. Manure.

VII. Control of Disease

VIII. Control of Weeds

IX. Control of Pests (Including Insects)

X. Characteristics of Varieties.

APPENDIX D

Interview Questions

	Opinion		
	High	Medium	Low
1. To what extent can farmers apply this information to increase crop yields?			
2. Would you say that the information presented at the meetings is useful or theoretical?			
3. Has this course helped to point out any soil problems on your farm that you were not aware of?			
4. Do you feel this course will help you to determine why your crops are not higher yielding?			
5. Are these training meetings best suited to the time you have available for study?			
6. Before you enrolled in the course, did you feel that you had a soil problem on your farm?			
7. Before attending, did you think that soils problems were the biggest production problems you had on your farm?			
8. How were you informed of these meetings?			
9. Were you given enough information about the meetings so that you could decide if they were worth attending?			
10. Do you think that the County Extension Director and the agent put much work in planning and arranging for these meetings?			

Interview questions, cont.	Opinion		
	High	Medium	Low
11. Did you like the use of visual aids in presenting soil management information?			
12. Do you think that some other method of presenting the material would be better?			
13. Do you think that questions asked by other members of the class help you to learn more about soil management?			
14. Were you given enough time and opportunity to ask all of the questions you wanted to?			
15. Did you get acquainted with many of the other members of the class?			
16. Would you like to get together again with this same group for another series of this type?			
17. After completing this course, would you like to enroll in some other courses of a similar nature?			
18. Do you feel that extension and Michigan State University are doing the right thing in offering these courses around the state?			
19. Would you like to take a series of short courses in one subject, like soils or crop production?			
20. If many of these courses were offered around the state, it would cost more than the Extension Service has money for. Should the money come from taxes, or should the people who attend be charged for the instruction?			

APPENDIX E

Dear Mr. _____

You may remember me as the fellow from Colorado who visited some of the meetings when Dr. Robertson was teaching soil management. As part of my graduate work at Michigan State University, I am interested in looking at the best methods of informing farm operators, such as yourself, of the latest developments in the field of agriculture.

You have been selected as one of about ten people who were enrolled in the course to give your opinions concerning the value of this type of training. I would like to come to your home and discuss briefly, with you, some of the things you felt were good or bad about these lessons.

If you could spare perhaps 30 or 40 minutes during the time I shall be in the county, would you please check the time which would be most convenient for you to visit with me, and return the letter to me in the self-addressed envelope? Would you also indicate a second choice of time if you can?

If something should happen at the last minute that would prevent you from meeting with me, you could call your extension director. I will be checking with him from time to time.

Thank you for your help.

Sincerely,

Abram J. Relyea
113 Ag Hall
Michigan State University
East Lansing, Michigan

AR:am
enc.

APPENDIX F

Mr. Abram J. Relyea
113 Agricultural Hall
Michigan State University
East Lansing, Michigan

Dear Mr. Relyea:

The best time for you to come visit with me for 30 - 40 minutes concerning the short course in Soil Management would be sometime: (1st and 2nd choice)

Tuesday afternoon 2:00 - 4:30, March 13 _____
Tuesday evening 7:00 - 9:30, March 13 _____
Wednesday morning 8:30 - 11:00, March 14 _____
Wednesday afternoon 1:00 - 4:30, March 14 _____
Wednesday evening 7:00 - 9:30, March 14 _____

I will be unable to meet with you _____.

Signed

_____